

NEW SPECIES OF ARIZONA NOCTUIDS, I.
(LEPIDOPTERA: NOCTUIDAE: HADENINAE)

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ABSTRACT—*Synorthodes*, a new genus, with two new species, *auriginea* and *typhedana*, and *Orthodes adiaistola*, a new species, are hadenine noctuids that have been taken in the mountain ranges of southeastern Arizona.

Nine extended periods of collecting in Arizona, one spring, one spring and summer, six summers, and one summer and fall, thirty-one months in all, have produced a large number of species of noctuid moths. Among them are a number of new species of which the following three hadenines are part.

Synorthodes n. gen.

Type-species: *Synorthodes auriginea* n. sp.

This genus is erected for a small number of moths that occur in the mountain ranges of southeastern Arizona and in the highlands of Mexico. In the past they would have been included in the heterogeneous assemblage of species that Hampson (1905) placed under the name *Eriopyga* Guenée. Dyar (1912, p. 60) described one species of this genus from Mexico as *Eriopyga melanops*. The genus is related to *Orthodes* Guenée, 1852, but it differs by the absence of specialized sex scaling and tufts in the males and by the general conformation of the male and female genitalia.

Description: Eyes hairy, the hairs longer toward rear of eye; palpi mostly smooth-scaled, only basal segment fringed with hairlike scales; proboscis well developed; antennae simple and pubescent. Thorax smooth, clothed with narrow scales; wing venation much as in *Orthodes*, forewing with R_5 connate with R_{3+4} and from apex of discal cell or slightly separated at origin, M_2 of hindwing absent and R_s and M_1 and M_3 and Cu_1 short stalked (M_2 evident in *Orthodes*;



Fig. 1. *Synorthodes typhedana* Franclemont. Type. Fig. 2. *Synorthodes auriginea* Franclemont. Type. Fig. 3. *Orthodes adiaistola* Franclemont. Type.



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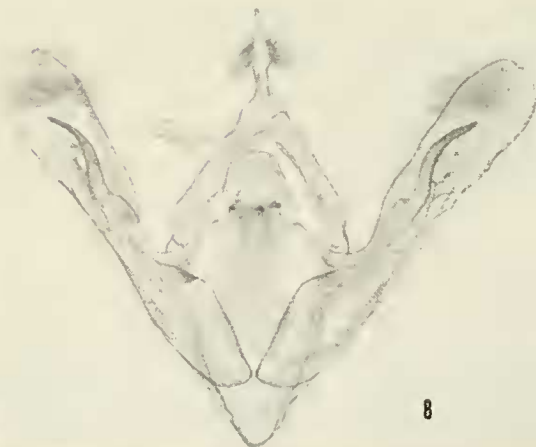
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Fig. 4-5. *Synorthodes typhedana*. 4, male genitalia, aedeagus removed; genitalia slide JGF 4532. Madera Canyon 5600', Santa Rita Mts., Santa Cruz Co., Arizona, 1 July 1960, J. G. Franclemont. 5, aedeagus, genitalia slide JGF 4532. Fig. 6-7. *Synorthodes auriginea*. 6, male genitalia, aedeagus removed; genitalia slide JGF 4535. Madera Canyon 5600', Santa Rita Mts., Santa Cruz Co., Arizona, 27 June 1960, J. G. Franclemont. 7, aedeagus; genitalia slide JGF 4535. Fig.

in *O. crenulata* (Butler) only M_3 and Cu_1 stalked in hindwing, in *O. cynica* Guenée only R_s and M_1 stalked in hindwing.)

Male genitalia with uncus well developed, narrow at base, enlarged toward apex, apex with a group of specialized setae; penicillus of tegumen weak or almost absent; valves membraneous on apical $\frac{1}{2}$, more heavily sclerotized on basal $\frac{1}{2}$, editum well developed, elasper heavily sclerotized, linear and long, ampulla, the linear structure dorsad of the elasper, lightly sclerotized; juxta various, with a raised circular bulla or fovea, an elongate ridge, or an apical projection; aedocagus short and heavy, vesica somewhat balloonlike when inflated, covered with small spicules, in some species with a large cornutus or sclerotized plate.

Female genitalia as figured. Those of an undescribed Mexican species are intermediate between the 2 figured.

Synorthodes auriginea n. sp.

Figure 2 male moth, 6 and 7 male genitalia, 12 female genitalia, 19 and 20 venation of forewing and hindwing.

This species is similar to *melanops*, but it differs by the greater amount of yellow scaling on the forewings, the white scaling on the veins, and the irregular subterminal line. The male genitalia are similar to those of *melanops*, but they differ by the broader expanded area of the costa of the valve and the shorter "digital pieces."

Description: Head clothed with a mixture of black, gray and yellow scales; palpi with 2nd segment black on outer side with pale margins and pale apex, 3rd segment pale. Thorax with an admixture of black, grayish white, and yellow scales; patagia somewhat darker with upper margins grayish white; anterior tuft grayish white. Forewing shining blackish gray with considerable bright yellow and white scaling; basal line double, black with yellow between black lines; antemedial line double, inner line yellow, outer line irregular, black; postmedial line evenly curved, double, inner line black, outer line an inner series of black points on veins followed by an outer series of white points; subterminal line irregular, yellow, with a black shade on inner side; a series of terminal black dots in the interspaces; fringe concolorous with terminal area; orbicular and reniform black with yellow annuli, orbicular round. Hindwing fuscous black; fringe dark with a pale line at base and pale on outer part. Abdomen mostly black above with yellow anal tufts, below yellowish. Forewings and hindwings below yellowish gray with black discal dot on hindwing and vague indication of 1 on forewing; black postmedial line on forewing and hindwing, that on hindwing darker; area beyond postmedial line heavily infuscate; a series of terminal black dots in the interspaces. Legs with tibiae and tarsal segments with pale apical bands.

Length of forewing 12–13 mm; type 13 mm.

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8–9. *Orthodes adiaastola*. 8, male genitalia, aedocagus removed; genitalia slide JGF 4281. Madera Canyon 4880', Santa Rita Mts., Santa Cruz Co., Arizona, 30 July, 1959, J. G. Franclemont. 9, aedocagus; genitalia slide JGF 4281.

Male genitalia as figured; vesica without a cornutus, membrane with numerous small spinules.

Female genitalia as figured.

Type: Male. Pinery Canyon 7000', Chiricahua Mts., Cochise Co., Arizona, 14 July 1966, J. G. Franclemont. (Franclemont Collection).

Paratypes: Madera Canyon 5600', Santa Rita Mts., Santa Cruz Co., Arizona, June, 1960, 1 ♂; East Turkey Creek 6400', Chiricahua Mts., Cochise Co., Arizona, July, 1967, 1 ♂; Onion Saddle 7600', Chiricahua Mts., Cochise Co., Arizona, July, 1966 and 1967, 3 ♂, 1 ♀; Pinery Canyon 7000', Chiricahua Mts., Cochise Co., Arizona, July 1966, 1 ♂, J. G. Franclemont. (Franclemont Collection). Madera Canyon 5600', Santa Rita Mts., Sta. Cruz Co., Arizona, June, 1955, 1 ♂, Lloyd M. Martin; Madera Canyon, Santa Rita Mts., Southern Arizona, July, 1956, 2 ♂, 1 ♀, Lloyd M. Martin, John A. Comstock, William A. Rees; Upper Camp, Pinery Canyon [7000'], Chiricahua Mts., Cochise Co., Arizona, July, 1956, 3 ♂, 1 ♀, Lloyd M. Martin, John A. Comstock, William A. Rees. (7 Collection Los Angeles County Museum of Natural History, 1 Franclemont Collection).

Syuorthodes typhedana n. sp.

Figure 1 male moth, 4 and 5 male genitalia, 10 female genitalia.

A species with glossy grayish black forewings, very similar to *melanops*, but it differs from that species by the irregular subterminal line and the obsolescent annuli surrounding the black orbicular and reniform spots. The male genitalia differ from those of *melanops* by the much less prominent lobe on the costa of the valve, the wide "digital-costal piece", the expanded sacculus of the valve, and the more elongate juxta. It differs from *auriginea* by its larger size and darker coloration.

Description: Head dark grayish black; palpi black. Thorax and patagia black; tegulae black with a considerable admixture of grayish yellow scales; anterior and posterior tufts pale. Forewing grayish black with a grayish yellow sheen; basal line double, dentate, black; antemedial line poorly defined, double, black with some yellowish scales; median shade vague, black; postmedial line poorly defined, double, inner line a series of irregular, black dots, outer line represented by yellowish white points on the veins; subterminal line irregular, pale, yellow with an enlarged yellow spot below vein Cu_2 , with a series of inwardly pointing, black, triangular spots on the inner side; a series of terminal, black spots in the interspaces; fringe darker at base and paler toward outer edge; orbicular rounded, subquadrate, black, without and evident pale annulus, reniform large, black, with a very indistinct pale annulus. Hindwing fuscous black, paler toward base; fringe dark with a pale line at base and pale on outer part. Abdomen blackish gray above, yellowish gray below. Forewings and hindwings below yellowish gray, heavily infusate on outer $\frac{1}{3}$, discal dots

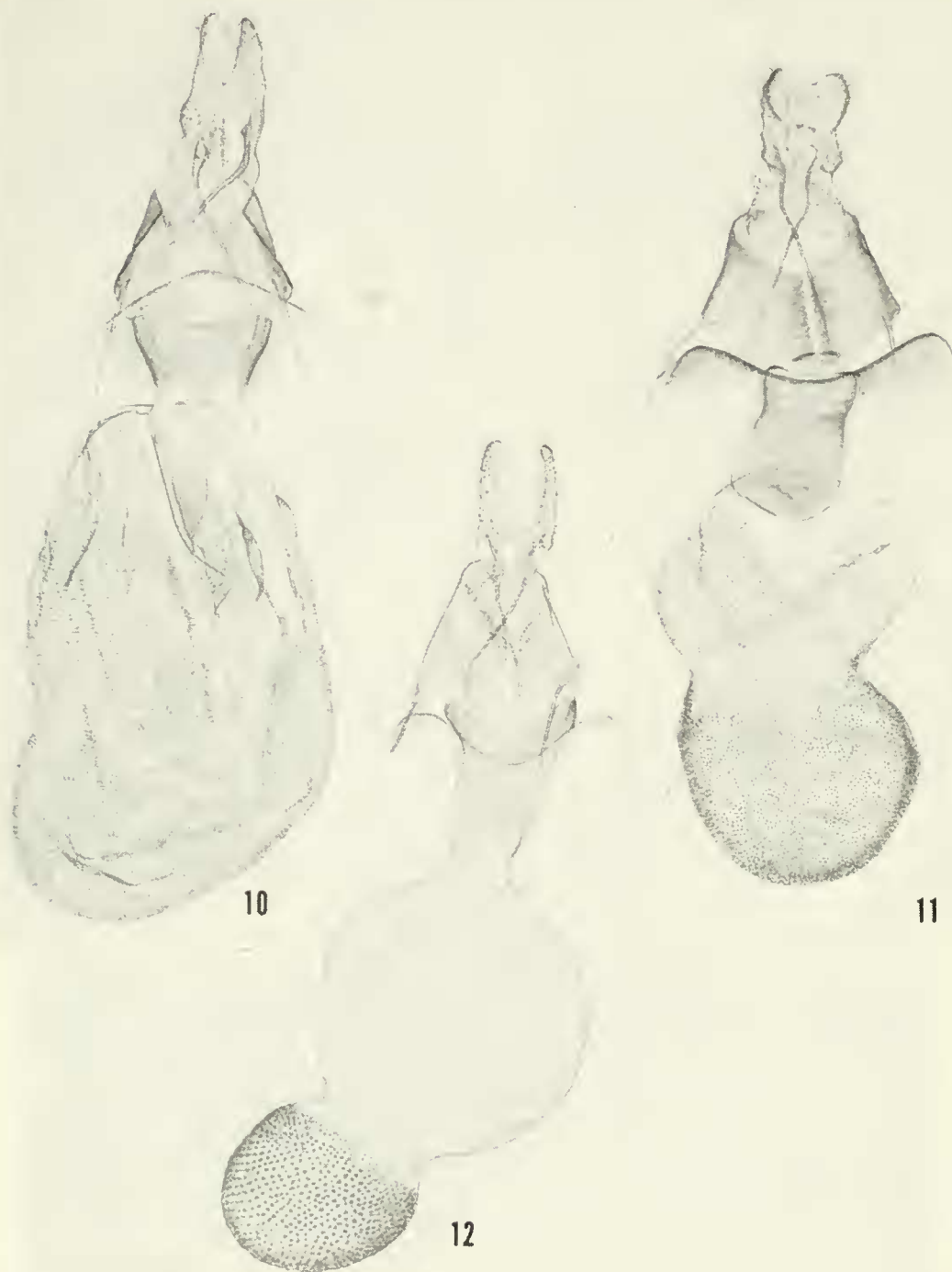


Fig. 10. *Synorthodes typhedana*. Female genitalia; genitalia slide JGF 4532. Madera Canyon 5600', Santa Rita Mts., Santa Cruz Co., Arizona, 1 July 1960, J. G. Franclemont. Fig. 11. *Orthodes adiaastola*. Female genitalia; genitalia slide JGF 4280. Madera Canyon 4880', Santa Rita Mts., Santa Cruz Co., Arizona, 30 June 1959, J. G. Franclemont. Fig. 12. *Synorthodes auriginea*. Female genitalia; genitalia slide JGF 5278. Onion Saddle 7600', Chiricahua Mts., Cochise Co., Arizona, 29 July 1966, J. G. Franclemont.

black, postmedial lines black, a series of black dots in the interspaces. Legs with tarsal segments with pale, apical annuli.

Length of forewing 15–16 mm; type 15 mm.

Male genitalia as figured; vesica with a short, stout cornutus, membrane with numerous small spinules.

Female genitalia as figured.

Type: Male. Madera Canyon 5600', Santa Rita Mts., Santa Cruz Co., Arizona, 1 July 1960, J. G. Franclemont. (Franclemont Collection).

Paratypes: Madera Canyon 4880' and 5600', Santa Rita Mts., Santa Cruz Co., Arizona, June and July, 1959, 1960, and 1963, 76♂, 59♀, J. G. Franclemont. South Fork, Cave Creek Canyon 5280', Chiricahua Mts., Cochise Co., Arizona, July, 1966, 1♂, 4♀; Cave Creek Canyon 5400', Chiricahua Mts., Cochise Co., Arizona, June and July, 1966, 5♂; East Turkey Creek 6400', Chiricahua Mts., Cochise Co., Arizona, June and July, 1966, 3♂, 2♀; Onion Saddle 7600', Chiricahua Mts., Cochise Co., Arizona, July, 1966 and 1967, 3♂, 3♀; J. G. Franclemont. (Franclemont Collection). Upper Camp, Pinery Canyon [7000'], Chiricahua Mts., Cochise Co., Arizona, July, 1956, 9♂, 6♀, Lloyd M. Martin, John A. Comstock, William A. Rees; Sunnyside, West side Huachuca Mts., Cochise Co., Arizona, July, 1958, 8♂, 1♀, Lloyd M. Martin. (22 Collection Los Angeles County Museum of Natural History, 2 Franclemont Collection).

Orthodes adiaistola n. sp.

Figure 3 male moth, 8 and 9 male genitalia, 11 female genitalia, 15 and 16 venation of forewing and hindwing.

A species that perhaps is confused in collections with *Pseudorthodes virgula* Grote, but it is larger and apparently allied to *Orthodes cynica* Guenée; the female genitalia are similar to those of the latter species.

Description: General color dull brown with some black scaling. Head and thorax dark brown; palpi black; posterior tuft of thorax black. Forewings dark brown, area between antemedial and postmedial lines lighter than basal $\frac{1}{3}$ and terminal $\frac{1}{3}$, these areas with black scaling; antemedial line somewhat irregular, crenulate, dentate inwardly; median shade vague; postmedial line outwardly curved from costa then almost straight to inner margin, black, crenulate, dentate outwardly with black points followed by pale points on the veins; subterminal line irregular, pale; area between postmedial and subterminal lines blackish; terminal series of short, black bars in interspaces; fringe concolorous with terminal area; orbicular and reniform somewhat paler than ground, vague, with vague annuli. Abdomen above fuscous, below whitish, heavily scaled with black and brown, anal tufts of male yellowish brown. Forewing below fuscous with vague, dark postmedial line and indistinct discal spot; hindwing below pale, dirty white, heavily infuscate along costal margin and beyond postmedial line, postmedial line evident, black, discal spot conspicuous, black. Tibiae and tarsal segments with narrow, pale, apical annuli.

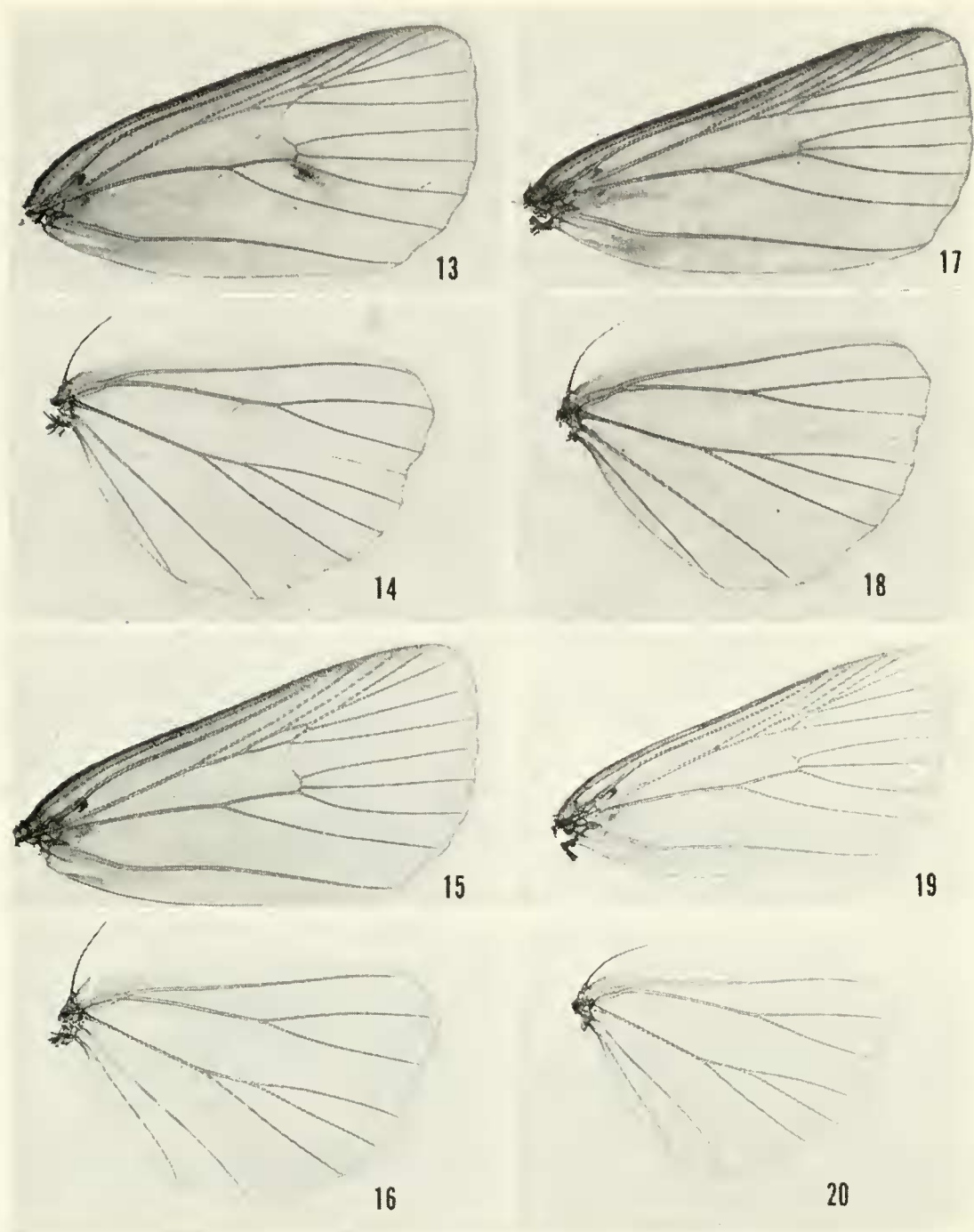


Fig. 13-14. *Orthodes cynica* Guenée. Venation of forewing and hindwing of male. Ithaca, New York. Fig. 15-16. *Orthodes adiaastola*. Venation of forewing and hindwing of male. Madera Canyon, Santa Rita Mts., Santa Cruz Co., Arizona. Fig. 17-18. *Orthodes crenulata* (Butler). Venation of forewing and hindwing of male. Arlington, Virginia. Fig. 19-20. *Syorthodes auriginea*. Venation of forewing and hindwing of male. Onion Saddle 7600', Chiricahua Mts., Cochise Co., Arizona.

Length of forewing 14–15 mm; type 15 mm.

Male genitalia as figured; vesica with well-defined areas of fine, hairlike spicules, no cornuti.

Female genitalia as figured.

Type: Male. Madera Canyon 4880', Santa Rita Mts., Santa Cruz Co., Arizona, 14 July 1959, J. G. Franclemont. (Franclemont Collection).

Paratypes: Madera Canyon 4880' and 5600', Santa Rita Mts., Santa Cruz Co., Arizona, June, July, August, September, October, 1959 and 1960, 43 ♂, 16 ♀, J. G. Franclemont. Cave Creek Canyon 5400', Chiricahua Mts., Cochise Co., Arizona, July, 1966, 2 ♂; East Turkey Creek 6400', Chiricahua Mts., Cochise Co., Arizona, June and July, 1966, 3 ♂; Onion Saddle 7600', Chiricahua Mts., Cochise Co., Arizona, July, 1966 and 1967, 3 ♂, 3 ♀; Pinery Canyon 7000', Chiricahua Mts., Cochise Co., Arizona, July, 1966 and 1967, 3 ♂, 1 ♀; J. G. Franclemont. (Franclemont Collection).

ACKNOWLEDGMENTS

The collecting in Arizona in 1960 was supported by Grant No. 303, Johnson Fund, American Philosophical Society, and in 1963 by Grant No. 3369, Penrose Fund, American Philosophical Society. Collecting and rearing of Lepidoptera in 1967 was supported by U.S.D.A.-ARS Grant No. 12-14-100-8031 (33). The drawings of genitalia are by Mrs. Margaret A. Mendadue. (Photographs are by the author.) I express my sincere appreciation to Ronald W. Hodges, Robert E. Dietz, IV, and George L. Godfrey for their assistance during the summers of 1959, 1966, and 1967, respectively.

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